



## ULTRASONIC FLAW DETECTOR MFD620C



### Product Overview

The MFD620C is an advanced digital ultrasonic flaw detector featuring a multi-color TFT LCD and a host of new features to meet challenging inspection requirements. It combines powerful flaw detection and measurement capabilities, extensive data storage, and the ability to transfer detailed inspection data to the PC via its high-speed USB port.

The instrument incorporates many advanced signal processing features including a 15MHz RF bandwidth to permit testing of thin materials, narrowband filters to improve signal to noise in high gain applications, a spike pulser for applications requiring higher frequencies, and a tunable square wave pulser to optimize penetration on thick or highly attenuating materials.

The instrument can be widely used in locating and sizing hidden cracks, voids, disbands, and similar discontinuities in welds, forgings, billets, axles, shafts, tanks and pressure vessels, turbines, and structural components.

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## Technical Parameters

- Range: 0 to 6000 mm, at steel velocity
- Material Velocity: 1000 to 15000m/s
- Display Delay: -20 to 3400  $\mu$ s
- Probe Delay/Zero Offset : 0 to 99.99 $\mu$ s
- Sensitivity Leavings: >60dB (flat-bottomed deep hole 200mm $\Phi$ 2)
- Resolution : >40dB (5P14)
- Noise Level:  $\leq$  8%
- Test Modes: Pulse echo, dual element and thru-transmission
- Pulser: Tunable Square Wave Pulser
- Pulse Repetition Frequency ranges from 10 Hz to 1000 Hz
- Pulse Energy: 200V, 300V, 400V, 500V, 600V selectable
- Bandwidth (amplifier bandpass ): 0.2 to 20MHz
- Gate Monitors: Two independent gates controllable over entire sweep range
- Rectification: Positive half wave, negative half wave, full wave, RF
- System Linear Deviation:Horizontal: +/-0.2% FSW, Vertical: 3% FSH, Amplifier Accuracy +/-1 dB.
- Reject (suppression): 0 to 80% full screen height
- Units: Inch or millimeter
- Transducer Connections: BNC or LEMO
- Power Requirements: AC Mains 100-240 VAC, 50-60 Hz
- Overall Dimensions:280H $\times$ 220W $\times$ 70D mm
- Relative Humidity:(20 ~ 95)% RH
- Power Supply:DC 9V
- Operating Temperature: -10 $^{\circ}$ C to 50 $^{\circ}$ C
- Storage Temperature: -30 $^{\circ}$ C to 50 $^{\circ}$ C

## Features

### Display

Hi-resolution multi-color TFT LCD with 4 user-selectable brightness control provides high contrast viewing of the waveform from bright, direct sunlight to complete darkness.

The hi-resolution multi-color TFT LCD display with fast 60 Hz update gives an “analog look” to the waveform providing detailed information that is critical in many applications including nuclear power plant inspections.

### Range

Up to 6000 mm in steel; range selectable in fixed steps or continuously variable. Suitable for use on large work pieces and in high-resolution measurements.

### Pulser

Pulse Energy selectable among 200V, 300V, 400V, 500V and 600V..

Pulse Width tunable from 0.1 $\mu$ s to 0.5  $\mu$ s to match the probes with different frequency.

Pulse Repetition Frequency adjustable from 10 Hz to 1 KHz in 1 Hz increments.

Damping selectable among 100  $\Omega$  , 200  $\Omega$  and 400  $\Omega$  for optimum probe performance

Test Modes include Pulse echo, dual and thru-transmission

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## **Receiver**

Sampling: 10 digit AD Converter at the sampling speed of 160 MHz

Rectification: Positive Halfwave, Negative Halfwave, Fullwave and RF

Analog Bandwidth: 0.2MHz to 20MHz capability with selectable frequency ranges (automatically set by the instrument) to match probe for optimum performance.

Gain: 0 dB to 110 dB adjustable in selectable steps 0.1 dB, 1.0dB, 2 dB, 6 dB, and locked.

## **Gates**

Two fully independent gates offer a range of measurement options for signal height or distance using peak triggering.

The echo-to-echo mode allows accurate gate positioning for signals which are extremely close together.

Gate Start: Variable over entire displayed range

Gate Width: Variable from Gate Start to end of displayed range

Gate Height: Variable from 0 to 99% Full Screen Height

Alarms: Threshold positive/negative

## **Memory**

Memory of 50 channel files to store calibration set-ups

Memory of 10000 wave files to store A-Scan patterns and instrument settings.

All the files can be stored, recalled and cleared.

## **Video Recorder**

Screen scenes can be captured as movie files. As long as 2 hours movie can be saved to the inside memory. It can be re-played using the instrument or the PC software delivered with the instrument.

Video Recorder is useful in many situations, it is very convenient for those who want to analyze the probing activities later.

## **Functions**

- Semiautomatic two point calibration: Automated calibration of transducer zero offset and/or material velocity
- Flaw Locating: Live display Sound-path, Projection (surface distance), Depth, Amplitude,
- Flaw sizing: Automatic flaw sizing using AVG/AVG or DAC, speeds reporting of defect acceptance or rejection.
- Digital Readout and Trig. Function: Thickness/Depth can be displayed in digital readout when using a normal probe and Peam path, Surface Distance and Depth are directly displayed when angle probe is in use.
- Both the DAC and the AVG method of amplitude evaluation are available.
- AWS D1.1.
- Curved Surface Correction feature
- Crack Height Measure function
- Weld figure feature
- Magnify gate: spreading of the gate range over the entire screen width
- Video Recording and play
- Auto-gain function
- Envelope: Simultaneous display of live A-scan at 60 Hz update rate and envelope of A-scan display
- Peak Hold: Compare frozen peak waveforms to live A-Scans to easily interpret test results.
- A Scan Freeze: Display freeze holds waveform and sound path data
- B Scan display feature

## **Real Time Clock**

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The instrument clock keeps running tracking the time.

### **Communication**

High speed USB2.0 port. Two USB modes can be selected: U-DISK and U-BRIDGE. In U-DISK mode, the instrument acts as a USB flash disk when connected to PC. Configuration files, saved pictures and recorded movies can be copied to PC when possible. In U-BRIDGE mode, the instrument exchanges data with DataPro Software. The optional DataPro software helps manage and format stored inspection data for high-speed transfer to the PC. Data can be printed or easily copied and pasted into word processing files and spreadsheets for further reporting needs. New features include live screen capture mode and database tracking.

### **Battery**

Internal rechargeable Li-ion battery pack rated 7.2V at 8800 mAh  
10 hours nominal operating time depending on display brightness  
8-10 hours typical recharge time

### **Knob**

Operating adjustments are easily and quickly made using the rotary knob.

## **Configuration**

	No.	Item	Qty	Remarks
Standard config.	1	Main unit	1	with multi-color TFT LCD Display
	2	Straight Beam Probe	1	4 MHz, $\Phi 10$
	3	Angle Beam Probe	1	4 MHz, 8 mm $\times$ 9 mm, 60°
	4	Probe Cable	1	Q9-C5, or optional C9- C5
	5	Battery Module	1	8.8 amp hour (MB-03)
	6	Power Adapter	1	
	7	Supporting pillar	1	
	8	Attached files	1	

	9	Datapro Software	1	
	10	USB Cable	1	MUSB01
	11	Power Cable	1	
	12	ABS Case		
Optional config.	1	Protective Cover for Main Unit		
	2	Various Probes		Selected according to the need like Dual-crystal Straight P, single crystal Straight Probe and so on

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